CLAIMS

APPENDIX A

-- Claim 1. (Currently amended) A method comprising:

providing a solvent and a conjugated polymer system;

mixing said polymer comprising said polymer system ~~and~~ with said solvent to form a solution;

said polymer is selected from the group consisting of a precursor to an electrically conductive polymer and an electrically conductive polymer;

in the event said polymer is a precursor to an electrically conductive polymer, said precursor to said electrically conductive polymer being made conductive by adding a dopant to said precursor to an electrically conductive polymer;

said solvent comprising a fluorinated solvent,

said polymer in said solution characterized by a dependence of the electrical conductivity of said electrically conductive polymer and said precursor, when converted to said electrically conductive polymer, on the concentration of said polymer in said solution, selecting said concentration to substantially maximize said electrical conductivity;

processing said solution to form an article.

2. (Previously presented) A method according to claim 1 wherein said polymer is in a solution of said fluorinated solvent and less than about 20 weight % of said solution.

3. (Previously presented) A method according to claim 1 wherein said precursor polymers to said electricallyconductive polymers are selected from the group consisting of: polyparaphenylenes, polyparaphenylenevinylenes, polyanilines, polyazines, polythiophenes, polythianaphthenes, polyphenylenesulfides, polyfuranes, polypyrroles, polyselenophenes, polyacetylenes and combinations thereof and copolymers thereof.

4. (Previously presented) A method according to claim 1 wherein said processing is selected from the group consisting of synthesizing said polymer in said solvent and solvating said polymer in said solvent.

5. (Previously presented) A method according to claim 1 wherein said polymer is a precursor to an electrically conductive polymer and exposed to said solvent while said precursor is exposed to a dopant.

6. (Previously presented) A method of forming a polymer selected from group consisting of a precursor to an electrically conductive polymer and an electrically conductive polymer comprising: exposing a solution of polymerizable units to a solvent comprising a fluorinated solvent during polymerization to form said polymer in said solvent, characterized by a dependence of the electrical conductivity of said electrical conductive polymer on the concentration of said polymer in said solvent, said concentration being selected to substantially maximize said electrical conductivity.

7. (Previously presented) A method comprising:
polymerizing monomers in the presence of a solvent comprising a fluorinated solvent to form an electrically conductive polymer, during neutralization of said electrically conductive polymer to an undoped form to form a deaggregated nondoped form of said electrically conductive polymer said polymer in said solvent characterized by a dependence of the electrical conductivity of said electrical conductive polymer on the concentration of said polymer in said solvent, said concentration being selected to substantially maximize said electrical conductivity.

8. (Previously presented) A method according to claim 1 wherein said solvent comprises a combination of said fluorinated solvent and a nonfluorinated solvent.

9. (Previously presented) A method according to claim 1 wherein said polymer is in a solution and is less than about 5 weight percent of said solution.

10. (Previously presented) A method according to claim 6 wherein said polymerizable units are selected from the group consisting of one or more of monomers and oligomers.

11. (Previously presented) A method according to claim 1 wherein said polymer is in a form selected from the group consisting of a solution and a solid state.

12. (Previously presented) A method according to claim 1 wherein said fluorinated solvent is selected from the group consisting of:
hexafluoroisopropanol, tetrafluoropropanol, pentafluoropropanol, hexafluorophenylpropanol, perfluorobutyl alcohol, octafluoropentanol, hexafluoro-2-propanol, pentafluoro-1-propanol, tetrafluorophenol, trifluorophenol, difluorophenol, tetrafluoro-1-propanol, 4-(trifluoromethyl)benzyl alcohol, 2,2,2- trifluoroethanol, 2,4,5 trifluorophenol, 2,4 difluorobenzyl alcohol, 2,4 difluorophenol, 4-fluorobenzyl alcohol,
2,2,3,3,3-pentafluoro-1-propanol, 2-(perfluorobutyl)ethanol, 2-(perfluorohexyl)ethanol, 2-(perfluorooctyl)ethanol, 2-(perfluorodecyl)ethanol, 2-perfluoro-3-methylbutyl)ethanol, 1H,1H,3H-tetrafluoro-1-propanol. 1H,1H,5H-octafluoro-1-pentanol,
1H.1H.7H-dodecafluoro-1-heptanol, 1H.1H.9H-hexadecafluoro-1-nonanol,
2H-hexafluoro-2-propanol , 1H,1H,3H-hexafluoro-2-butanol: trifluoroacetic acid, perfluoropropanoic acid, perfluorobutanoic acid, perfluoropentanoic acid, perfluorohexanoic acid, perfluorohepatanoic acid, perfluorooctanoic acid, perfluorononanoic acid, perfluorodecanoic acid, 3H-tetrafluoropropanoic acid, 5H-octafluoropentanoic acid, 7H-dodecafluoropentanoic acid, 9H-hexadecafluorononanoic acid, an amide of such a fluorine-containing carboxylic acid, trifluoromethansulfonic acid, heptadecafluorooctanesulfonic acid, perfluorobenzene, hexametaxylene, polyfluoroaromatic compounds, polyfluorotributylamine, perfluorotripropylamine, polyfluorotrialkylamine compounds, perfluorohexane, perfluorooctane, (perfluoro-n-octyl) ethane, perfluoro-(2,3,5-trimethylhexane), polyfluoroalkane compounds, (perfluoro-n-octyl)ethylene, polyfluoroolefin compounds, perfluorocyclohexane, perfluorodecalin, polyfluorocycloalkane compounds, perfluoro-(2-butyltetrahydrofuran), polyfluorocyclic ether compounds, perfluoro-(2-butyltetrahydrofuran), polyfluorocyclic ether compounds, trichlorotrifluoroethanol, 1,3-dichloro- 1,1,2,2,3-pentafluoropropane, 1,1-dichloro-2,2,3,3,3-pentafluoropropane, chlorofluorohydrocarbons, 1,1,2-trichloro-1,2,2-trifluoroethane, perfluoro (2-butylhydrofuran), perfluorohexane, perfluoro(2-butyl tetrahydrofuran), 1,2,2-trichloro-1,2,2-trifluoroethane, perfluoro(2-butyltetrahydrofuran), perfluorohexane, 1,1,2-trichloro-1,2,2 trifluoroethane, perfluoro(2-butyltetrahydrofuran), hexafluorobenzene, benzorifluoride, bisrifluoromethylbenzene, pentafluorobenzene, 1,3-bis(trifluoromethyl)benzene, 1,4-bis(trifluoromethyl)benzene, perfluorodecalin, perfluorocyclohexane. perfluoro(1,3,5-

trimethylcyclohexane), fluorine-containing alkylamine perfluorotributylamine, perfluorotripropylamine, a fluorine-containing cyclic ether, perfluoro(2-butyltetrahydrofuran), a fluorine-containing polyether, a bis(heptafluoroisopropyl)ketone, perfluorohexane, methyltrifluoroacetate, ethyltrifluoroacetate, butylpentafluoro propionate, trichlortrifluoroethane, monofluorotrichloromethane, fluorine substituted ketones, fluorine substituted esters, fluorine substituted amides, fluorine substituted ethers, fluorine substituted aromatic hydrocarbon, fluorine-substituted aliphatic hydrocarbon, 1,1,2-trichloro-1,2,2-trifluoroethane, 1,l,2,2-tetrachloro-1,1-difluoroethane, (trifluoromethyl)benzene, 1,3-bis(trifluoromethyl)benzene, 1,1,2-trifluorotrichloroethane, 1,2-difluorotetrachloroethane, hexafluorometaxylene, 1,1,2,3,4-hexafluorotetrachlorobutane, octafluorodichlorobutane, 1,1,2-trifluoro-1,2,2-trichloroethane, 1,2-difluoro-1,1,2,2-tetrafluoroethane, fluorohalogenides, perfluoroalkanes, perfluoroalkenes, cyclic fluoride compounds, perfluorohydrides, perfluorocarboxylice acids, perfluoroketones, perfluoroaldehydes, perfluoroalcohols, perfluoroethers, amine fluorides, perfluorothiols, perfluorosulfonic acids, vinvl fluoride, vinvlidene fluoride, trifluororethylene, chlorotrifluororethylene, 1,2-difluoroethylene, tetrafluoroethylene, hexafluoropropylene, perfluoror(methyl vinyl) ether, perfluoro(ethyl vinyl) ether, perfluoro (propyl vinyl) ether, perfluoro(1,3-dioxole), perfluoro(2,2-dimethyl-1,3-dioxole), perfluorotoluene, perfluorocyclohexane, perfluorodimethylcyclohexane, perfluoro-methylcyclohexane, perfluorooxylene, perfluorobenzene, perfluorodecalin, perfluorodecane, perfluorohexane, perfluorooctane, perfluorodecane, trifluorotoluene, pentafluorotoluene, dichlorodifluoromethane, 1,1-dichlorotetrafluoroethane, 1,2-dichlorotetrafluoroethane, 1-chloro-1,1-fluoroethane, 1-chloroheptafluoropropane, 1,1,1,2,2-pentafluoropropane, perfluorobutane, 2,3-di-chlorooctafluorobutane

2,2,3,3-tetrafluorobutanebutane, 1,1-dichloro-1-fluoroethane, 1,2-dichlorotetrafluoroethane, perfluoroisooctane, perfluorotributylamine, perfluoroheptane, perfluorinated 2-butyl tetrahydrofuran perfluorohexane, perfluorotributylamine, perfluorotriamylamine, fluorinated alkenes, pentafluorostyrene, octafluorostyrene, perfluoro-1,4-pentadiene, perfluoro-1,6-heptadiene, 3,5-bis(trifluoromethyl)styrenes, fluorinated acrylates and methacrylates, 2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-pentadecafluorooctyl acrylate,

2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-pentadecafluorooctyl methacrylate,

2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-nonadecafluorodecyl methacrylate

1,2,2,3,3,4,4,5,5,6,6-undecafluorocyclohexylmethyl acrylate,

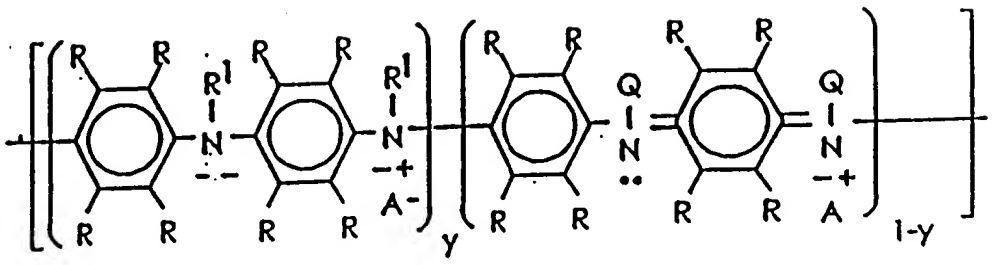
1,2,2,3,3,4,4,5,5,6,6-undecafluorocyclohexylmethyl acrylate.

1,2,2,3,3,4,4,5,5,6,6-decafluoro-4-trifluoromethylcyclohexylmethyl acrylate.

perfluorohexyl acrylate, perfluorobutyl acrylate, perfluorodecyl acrylate, 2,2,2-trifluoroethyl acrylate, 2,2,2-trifluoroethyl methacrylate, 1,1,1,3,3,3-hexafluoro-2-propyl acrylate, $C_8F_{17}SO_2N(n\text{-}C_4H_9)CH_2O_2C - CH{=}CH_2$, trifluorinated alkyl acrylonitriles, trifluoromethyl acrylonitrile, perfluoroalkylvinyl ethers, perfluorobutyl vinyl ether, pentafluorovinyl ether.

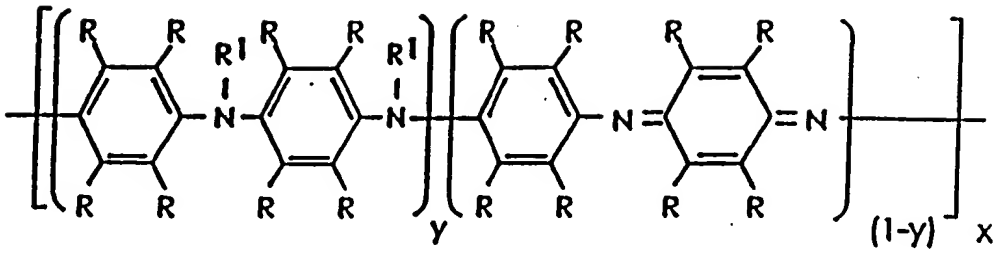
13. (Previously presented) A method according to claim 1 wherein said polymer is a polyaniline.

14. (Previously presented) A method according to claim 1 wherein said polymer is polyaniline having structural formula:



wherein each R can be H or any organic or inorganic radical; each R can be the same or different; wherein each R^1 can be H or any organic or inorganic radical, each R^1 can be the same or different; wherein $x \geq 1$ has a value of from about 0 to about 1.

15. (Previously presented) A method according to claim 1 wherein said polymer is a polyaniline having structural formula:



wherein each R can be H or any organic or inorganic radical; each R can be the same or different; wherein each R^1 can be H or any organic or inorganic radical, each R^1 can be the same or different; $x \geq 1$; Q^+ is a cation and $A\geq$ is anion; y has a value of from about 0 to about 1.

16. (Previously presented) A method according to claim 1 wherein said solvent comprises more than one fluorinated solvent.

17. (Previously presented) A method according to claim 1 further including forming from said polymer an object selected from the group consisting of a film, a fiber, and a structural part.

18. (Previously presented) A method according to claim 1 wherein an electrically conducting polymer is formed having a level of electrical conductivity thereof which is varied by varying the concentration of said polymer in solution.

19. (Previously presented) A method according to claim 1 wherein an electrically conducting polymer or precursor is blended with a thermoset or thermoplastic polymer.

20. (Allowed) A method comprising providing a solution of emeraldine base and a 50/50 mixture of hexafluoroisopropanol / hexafluorophenylpropanol said emeraldine base being greater than 3% of said solution; adding a dopant to said emeraldine base to a conductive form of said emeraldine base said dopant is selected from the group consisting of camphorsulfonic acid and acrylamido propane sulfonic acid;
said conductive form has a electrical conductivity of greater than about 200 s/cm.

21. (Previously presented) The method of claim 12 further including non-fluorinated solvents selected from the group consisting of nonfluorinated alcohols, phenols, esters, ethers, ketones, amides, amines, alkanes, cyclic alkanes, alkenes, aromatics, and so on such as anisole, benzyl alcohol, cyclohexanone, ethyl lactate, ethyl acetate, diethyl ketone, diethyl malonate, m-cresol, phenol, N-methylpyrrolidinone, N-dimethylformamide, propylene glycol dimethyl ether acetate, isopropanol, ethanol, water, dimethylpropylene urea, gamma butyrolactone, diethylether, benzene, toluene, chloroform, tetrahydrofuran, heptanone, pentanone, and pentanones.

Claim 22. (Currently amended) A method comprising:

providing a solvent and a conjugated polymer system, mixing said polymer comprising said polymer system ~~and~~ with said solvent to form a solution;

said polymer is selected from the group consisting of a precursor to an electrically conductive polymer and an electrically conductive polymer;

in the event said polymer is a precursor to an electrically conductive polymer, said precursor to said electrically conductive polymer being made conductive by adding a dopant to said precursor to an electrically conductive polymer;

said solvent comprising a fluorinated solvent;

said polymer in said solution characterized by a dependence of the electrical conductivity of said electrical conductive polymer and said precursor, when converted to said electrically conductive polymer, on the concentration of said polymer in said solution, selecting said concentration to provide a selected value of said electrical conductivity;

processing said solution to form an article.

Claim 23. (New) A method of processing electrically conducting polymers or precursors thereof, said processing resulting in high electrical conductivity, good solubility of said polymers and of said precursors in a solvent, and good solution stability comprising:

blending a fluorinated solvent with a polymer to form a solution, the use of said fluorinated solvent forming highly solvated polymer chains in said solution; and

said polymer being selected from the group consisting of a precursor to an electrically conductive polymer, and an electrically conductive polymer;

in the event said polymer is a precursor to an electrically conductive polymer, said precursor to said electrically conductive polymer being made conductive by adding a dopant to said precursor to an electrically conductive polymer;

said polymer in said solution characterized by a dependence of the electrical conductivity of said electrically conductive polymer, and said precursor, when converted to said electrically conductive polymer, on the concentration of said polymer in said solution, said concentration being selected to substantially maximize said electrical conductivity;

processing said solution to form an article.

Claim 24. (New) A method of processing electrically conducting polymers or precursors of electrically conducting polymers, said processing resulting in high electrical conductivity, good solubility of said electrically conducting polymers and of said precursors to electrically conducting polymers in a solvent, and good solution stability comprising:

blending a fluorinated solvent with a conjugated polymer system to form a solution, said fluorinated solvent solvating chains in said polymer to deaggregate any aggregated molecules in said polymer comprising said polymer system; and

said polymer in said polymer system being selected from the group consisting of a precursor to an electrically conductive polymer, and an electrically conductive polymer;

in the event said polymer is a precursor to an electrically conductive polymer, said precursor to said electrically conductive polymer being made conductive by adding a dopant to said precursor to an electrically conductive polymer;

said polymer in said solution characterized by a dependence of the electrical conductivity of said electrically conductive polymer, and said precursor to an electrically conductive polymer, when converted to an electrically conductive polymer, on the concentration of said polymer in said solution, said concentration being selected to substantially maximize said electrical conductivity;

processing said solution to form an article. --